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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,712

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Mansour A Aldajani

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EXAMINER

JEANGLAUDE, JEAN BRUNER

ART UNIT

PAPER NUMBER

2819

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/529,712

Applicant(s)

ALDAJANI ET AL.

Examiner

Jean B. Jeanglaude

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 7-26-07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### ***Response To Amendments/Arguments***

Regarding the applicant's argument on second C of the argument, last paragraph that "the applicant's invention, on the other hand, implements an instantaneous and sample-by-sample adaptation to the quantization step-size", this part of the argument is not claimed. However, Mansour et al. (Stability and Performance Analysis of an Adaptive Sigma-Delta Modulator" discloses an apparatus for adaptive modulation where instantaneous and sample-by-sample adaptation to a quantization step-size is used (see figs. 13 –17). Therefore, the argument is moot.

### **DETAILED ACTION**

#### **Specification**

It is suggested to update the continuing data for the US application number 10/332,750 since it became a patent.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 - 14 are rejected under 35 U.S.C. 102(b) as being anticipated by J. Yu et al. (Adaptive Quantisation For one bit sigma-delta modulation, IEEE Proceedings-G, Vol. 139, No. 1, Feb. 1992).

3. Regarding claim 1, J Yu et al. discloses an apparatus for adaptive modulation (fig. 4) , comprising: a one-bit modulator including a quantizer for generating a binary

output signal from an analog input signal using a single quantization bit (fig. 4, title; page 40, right column; page 41, left column) ; and a multi-bit adapter (the quantizer) for generating a scaling signal for scaling a step-size of the modulator using multiple quantization bits wherein the step-size is adapted based on an estimate of an absolute value of a signal into to the quantizer (figs. 4, 5; pages 40, 41, 42).

4. Regarding claim 4, J. Yu et al. discloses an apparatus (figs. 4, 5, 6) , wherein the modulator comprises: a summing junction (the adder) for comparing an analog input signal  $x(n)$  to an encoding signal  $v(n)$  to generate an error signal  $e(n)$  representing a difference between the analog input signal  $x(n)$  and the encoding signal  $v(n)$  (fig. 4, page 41); a filter (the low pass filter) for filtering the error signal  $e(n)$  to generate a signal  $p(n)$  (fig. 4); the quantizer (the quantizer) for converting the signal  $p(n)$  into a binary output signal  $y(n)$  (fig. 4); a multiplier (MDAC shown in fig. 5) for multiplying the binary output signal  $y(n)$  by a scaling signal  $d(n)$  output by the adapter to generate the encoding signal  $v(n)$  (page 42); and a delay for the delaying the encoding signal  $v(n)$  to generate a delayed encoding signal  $v(n-1)$  (fig. 7)[fig. has a number of delays].

5. Regarding claim 5, J. Yu et al. discloses an apparatus (fig. 4) wherein the adapter produces both the scaling signal  $d(n)$ , which is an approximation of the absolute value of the signal  $p(n)$ , and a binary sequence signal  $q(n)$  from which the scaling signal  $d(n)$  can be re-generated (pages 40, 41).

6. Regarding claim 9, J. Yu et al. discloses an apparatus for adaptive demodulation (fig. 4) , comprising: a multi-bit adapter for receiving a binary sequence signal  $q(n)$  from an adapter of an adaptive modulation apparatus and for generating a scaling signal  $d(n)$

in response thereto using multiple quantization bits (the demodulator section in fig. 4 receives the output of the modulator circuit); a multiplier (MDAC in fig. 5) for multiplying a binary output signal  $y(n)$  received from a modulator of the adaptive modulation apparatus by the scaling signal  $d(n)$  to generate an encoding signal  $v(n)$ , wherein the binary output signal  $y(n)$  is generated by the one bit modulator from an analog input signal  $x(n)$  using a single quantization bit (fig. 5; page 42); and a low-pass filter (lowpass circuit in the demodulator circuit of fig. 4) for receiving the encoding signal  $v(n)$  and for generating a signal  $\{\text{circumflex over } (x)\}(n)$ , which is a re-creation of an analog input signal  $x(n)$  to the modulator of the adaptive modulation apparatus (fig. 5; pages 41, 42). wherein the binary sequence signal  $q(n)$  is generated by the adapter of the adaptive modulation apparatus based on an estimate of an absolute value of an input signal to a quantizer in the one bit modulator of the adaptive modulation apparatus (figs. 4, 5; pages 40, 41, 42).

7. Regarding claims 2, 10, J. Yu et al. discloses an apparatus (figs. 4, 5), wherein the adapter includes a companded differential pulse code modulator (DPCM) (figs. 4, 5).

8. Regarding claims 6, 12, J. Yu et al. discloses an apparatus (figs. 4, 5) wherein the adapter is used in an adaptive sigma-delta modulator (figs. 4, 5; title).

9. Regarding claims 7, 13, J. Yu et al. discloses an apparatus (figs. 4, 5) , wherein the adapter is used in an adaptive delta modulator (figs. 4, 5; title).

10. Regarding claims 8, 14, J. Yu et al. discloses an apparatus (figs. 4, 5) wherein the adapter is used as a companded delta modulator (figs. 4, 5; title).

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11. Regarding claims 3 and 11, J. Yu et al. discloses an apparatus (figs. 4, 5) , wherein the adapter includes a logarithm term block for companding an absolute value of a filtered error signal, the companded DPCM for modulating an output of the logarithm term block and an exponential term block for expanding an output of the companded DPCM (page 41, starting at the "logic design of adaptation).

#### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Jeanglaude whose telephone number is 571-272-1804. The examiner can normally be reached on Monday - Friday 7:30 A. M. - 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in cursive script, reading "Jean Bruner Jeanglaude".

Jean Bruner Jeanglaude  
Primary Examiner  
August 9, 2007